

IN THE CLAIMS

Claim 1 has been amended as follows:

1. (Currently amended) A method for speed-resolved flow measurement during a movement cycle in magnetic resonance tomography, comprising the steps of:

acquiring a magnetic resonance tomography overview image of a selected region of a living subject exhibiting a movement cycle, said selected region encompassing moving tissue moving through said selected region and non-stationary tissue surrounding said moving tissue;

displaying the overview image on a screen;

in a data acquisition procedure executed during said movement cycle, quasi-simultaneously acquiring first data for an anatomical image series of said selected region with the images in said series respectively showing said non-stationary tissue in successive, different positions, and second data for a speed-resolved image series of a moving region, that encompasses said moving tissue, identified within said selected region, with respective images in said anatomical image series having a time correspondence with respective images in said speed-resolved image series; and

generating from said first data and said second data, reconstructing and displaying said anatomical image series and said speed-resolved image series in image space on said screen with each image in said speed-resolved image series being directly integrated in the time-

corresponding image of the anatomical image series using only said time correspondence; and
segmenting said moving region within the selected region in the speed-resolved image series in image space at a time selected from the group consisting of during said data acquisition procedure and immediately after said data acquisition procedure.

Claim 2 has been amended as follows:

2. (Currently Amended) A method as claimed in claim 1 comprising segmenting said moving region identified within said selected region automatically during said data acquisition of said speed-resolved image series procedure.

Claim 3 has been cancelled.

3. (Cancelled)

4. (Original) A method as claimed in claim 1 comprising color-coding the images in said speed-resolved image series.

Claim 5 has been amended as follows:

5. (Currently Amended) A method as claimed in claim 1 comprising displaying said anatomical image series and said speed-resolved image series on said screen immediately after acquiring said first data for said anatomical image series and said second data for said speed-resolved image series.

6. (Original) A method as claimed in claim 5 comprising displaying said anatomical image series and said speed-resolved image series as a movie on said screen.

7. (Previously presented) A method as claimed in claim 1 comprising manually identifying, on said screen, said moving region within said selected region.

Claim 8 has been amended as follows:

8. (Currently Amended) A method as claimed in claim 1 comprising identifying a plurality of moving regions within said selected region during the movement cycle, and acquiring second data for a speed-resolved image series for each of said regions.

Claim 9 has been amended as follows:

9. (Current Amended) A method as claimed in claim 1 comprising acquiring said first data for said anatomical image series and said second data for said speed-resolved image series for a time duration, as said movement cycle, selected from the group consisting of a breathing cycle of said subject and a heart cycle of said subject.

Claim 10 has been amended as follows:

10. (Currently Amended) A method as claimed in claim 1 comprising acquiring said first data for ~~each of~~ said anatomical image series and said second data for said speed-resolved image series at approximately 20 images per movement cycle.

Claim 11 has been amended as follows:

11. (Currently amended) A magnetic resonance tomography apparatus comprising:

a magnetic resonance scanner ~~adapted~~ configured to receive a living subject therein, said living subject exhibiting a movement cycle, ~~said selected region encompassing moving tissue moving through said selected region and non-stationary tissue surrounding said moving tissue;~~

a control computer ~~for operating~~ configured to operate said magnetic resonance scanner;

a display screen connected to said control computer; and

said control computer ~~operating~~ being configured to operate said magnetic resonance scanner to acquire a magnetic resonance tomography overview image of ~~said a~~ a selected region of the living subject, said selected region and ~~said computer causing to cause~~ the overview image to be displayed on said screen, and to operate said magnetic resonance apparatus by execution of a data acquisition procedure during said movement cycle to quasi-simultaneously acquire first data for an anatomical image series of the selected region with the images in said series respectively showing said non-stationary tissue in successive, different positions, and second data for a speed-resolved image series of a moving region, that encompasses said moving tissue, identified within said selected region, with respective images in said anatomical image series having a time correspondence with respective images in said speed-resolved image series, and generating, from said first and second data, to reconstruct and displaying display said anatomical image series and said speed-resolved image series in image space on said screen with each image in said speed-resolved image series being directly integrated in the time-corresponding image of the anatomical image series using only said time correspondence, and to segment said moving region within the selected region in the speed-resolved image series in image space at a time selected from

the group consisting of during said data acquisition procedure and immediately after said data acquisition procedure.

Claim 12 has been amended as follows:

12. (Currently amended) A computer-readable medium encoded with a data structure, said computer-readable medium being loadable into a control computer of a magnetic resonance tomography apparatus, including a magnetic resonance scanner operated by the control computer and a display screen connected to the control computer, data structure causing said control computer to:

operate said magnetic resonance apparatus to acquire a magnetic resonance tomography overview image of a selected region of a living subject exhibiting a movement cycle ~~said selected region encompassing moving tissue moving through said selected region and non-stationary tissue surrounding said moving tissue;~~

display cause the overview image to be displayed on said screen,

operate said magnetic resonance apparatus by executing a data acquisition procedure during said movement cycle[[,]] to quasi-simultaneously acquire first data for an anatomical image series of said selected region with the images in said series respectively showing said non-stationary tissue in successive, different positions, and second data for a speed-resolved image series of a moving region identified within a selected region during the movement cycle, with respective images in said anatomical image series having a time correspondence with respective images in said speed-resolved image series, and

display to cause said anatomical image series and said speed-resolved image series to be displayed in image space on said screen with each image in said speed-resolved image series being directly integrated in the time-corresponding image of the anatomical image series using only said time correspondence; and
to segment said moving region within the selected region in the speed-resolved image series in image space at a time selected from the group consisting of during said data acquisition procedure and immediately after said data acquisition procedure.